E 34.3 N 1.3
@mostar

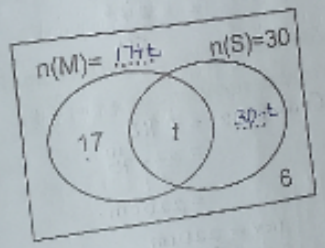
SECTION B: 60 MARKS

Answer all questions in this section

Marks for each question are indicated in brackets

In a class party, two types of drinks were served, soda (S) and mineral water (M). 30 pupils took soda and t pupils took both soda and mineral water. 6 pupils took neither of the drinks while 17 pupils took only mineral water. The number of pupils who took soda only was twice that of those who took both soda and mineral water.

(a) Use the given information to complete the Venn diagram below. *(02 marks)*



(b) Find the number of pupils who took both drinks. *(02 marks)*

soda only = twice both.

30 − t = 2(t)

30 − t = 2t

30 − t + t = 2t + t

30/3 = 3t/3

t = 10 pupils.

(c) Calculate the total number of pupils in the class. *(02 marks)*

n(S) + n(M)only + 6.

30 + 17 + 6

36 + 17

53 pupils.

17. Solve: $\frac{5}{6}k - 7 = 3$

$\frac{5}{6}k - 7 = 3$

$\frac{5}{6}k - 7 + 7 = 3 + 7$

$\frac{5}{6} \times \frac{5}{6}k = 10 \times 6$

$\frac{5}{5_1}k = \frac{\overset{3}{\cancel{120}}}{\underset{1}{\cancel{5}}}$

$k = 24$

$k = 12$.

18. Find the mean of the following numbers: 4, 7, 8, 5.

$\text{Mean} = \frac{\text{Total sum}}{\text{Total number}}$

$= \frac{4+8+7+5}{4_1}$

$= \frac{24}{4_1}$

$= 6$

Mean = 6.

19. The diameter of a bicycle wheel is 70 cm. Find the distance it covers in two complete revolutions. (Use $\pi = \frac{22}{7}$).

Circumference $= \pi D$

$= \frac{22}{7_1} \times \overset{10}{\cancel{70}}$

$= 220\text{cm}$.

1 rev = 220 cm

2 rev = (2 × 220cm)

440cm.

20. An aeroplane flying at an average speed of 260 km/h from airport x to airport N took 45 minutes. Calculate the distance between the two airports.

Distance = Speed × Time

$= 260\text{km/h} \times \frac{\overset{3}{\cancel{45}}}{\underset{4}{\cancel{60}}}\text{hr}$

$= \overset{65}{\cancel{260}}\text{km/h} \times \frac{3}{\underset{1}{\cancel{4}}}\text{hr}$

$= 65\text{km} \times 3$

$= 195\text{ km}$.

deposited sh 750,000 in a bank. The bank offers a simple interest
e of 18% per year. After some time, Kapere had an amount of
,000 in the bank.

Find the interest Kapere earned. (02 marks)

Amount = Interest + Principal

Interest = Amount − Principal.

Sh. 885000

−Sh. 750,000

Sh. 135000

) Calculate how long the money was in the bank. (03 marks)

Time = Interest / Principal × Rate.

= 135000 / 750000 × 18/100

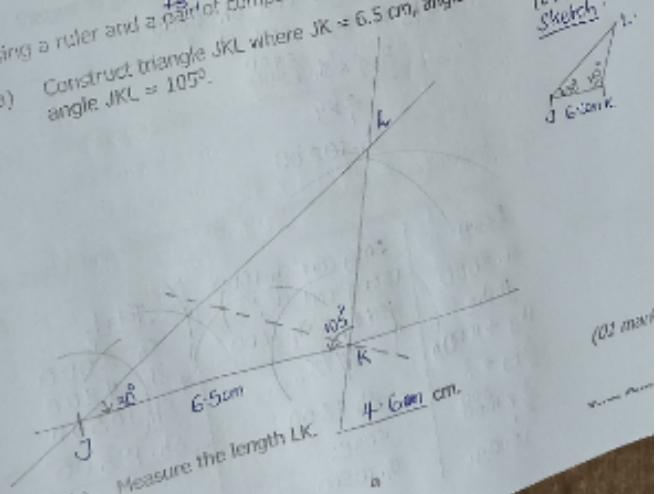
= 1350 / 75 × 18

Time = 1year.

Using a ruler and a pair of compasses only.

(a) Construct triangle JKL where JK = 6.5 cm, angle LJK = 30° and angle JKL = 105°. (04 marks)

Sketch



(b) Measure the length LK. 4·6cm cm.

E 34.3 N 1.3
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22. Convert 103 five to base two. (04 mark

103 five
to base ten.
$(1\times5^2)+(0\times5^1)+(3\times5^0)$
$(1\times5\times5)+(0\times5)+(3\times1)$
25 + 0 + 3
28 ten.

To base two

Base	No	Rem.
2	28	0
2	14	0
2	7	1
2	3	1
	1	

11100 two

23. The list below shows prices of different items in a certain shop.

- 2 kg of sugar cost sh 6,800
- 500 g of posho cost sh 1,600
- 1 kg of beans costs sh 3,000
- 3 bars of soap cost sh 10,500

(a) How much money will Opio pay for 3 kg of sugar? (02 marks)

2 kg of sugar cost Sh. 6800
3 kg of sugar cost sh ?
3kg x Sh. 3400
Sh. 10200

(b) Nakitto buys 1 kg of beans, $1\frac{1}{2}$ kg of posho and 3 bars of soap. (03 marks)
How much does she pay?

Beans:
Sh. 3000

Posho
1kg → 1000g
$\frac{3}{2}$ kg → ?
$\frac{3}{2}\times\frac{1000}{1}$
1500g.

500g cost Sh. 1600
1500g cost sh ?
3 x 1600
Sh. 4800

soap:
Sh. 10500

Total:
Sh. 3000
+ sh 4800
Sh 10500
Sh. 18300

E 34.3 N 1.3
@mostar

(c) Calculate the total number of pupils in the class. *(02 marks)*

SST - 12
Eng - 16
MTC - 24
Sci - 10
RE - 18
80 pupils.

(d) Find the percentage of pupils who liked English best. *(02 marks)*

Eng - 16 pupils.

$\%age = \frac{English}{Total} \times 100\%$

$= \frac{16^2}{80} \times 100\%$

$= 2 \times 10\%$

$= 20\%$.

10. A box contains 5 blue and 6 red pens. A pen is picked at random from the box. Find the probability that the pen picked is blue.

Total pens.
$5+6$
$=11$.

Probability $= \frac{n(\text{Events})}{\text{S. Space}}$.
$= \frac{5}{11}$.

11. Solve: $3y = 5$ (finite 7)

$3y = (5+7)$ (finite 7)
$\frac{3y}{3} = \frac{12}{3}$ (finite 7)
$y = 4$ (finite 7)

12. Find the lowest common multiple (LCM) of 18 and 30.

2	18	30
3	9	15
3	3	5
5	1	5
	1	1

$2 \times 3 \times 3 \times 5$
$6 \times 15 = 90$

13. Work out: $9.8 \div 0.07$

$\frac{98}{10} \div \frac{7}{100}$

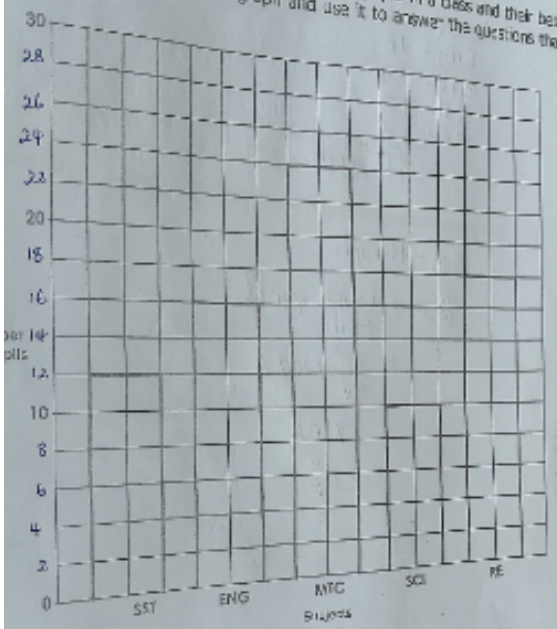
$\frac{98}{10} \times \frac{100}{7}$

14×10

140

E 34.3 N 1.3
@mostar

The bar graph below shows the number of pupils in a class and their best liked subjects. Study the graph and use it to answer the questions that follow.



(a) Which subject is liked by fewer pupils? *(01 mark)*

Science

(b) How many pupils liked Mathematics best? *(01 mark)*

24 pupils.

14. Auma sold two cocks for sh 70,000 making a profit of sh 12,000. If both cocks cost the same price, find the price Auma bought each cock.

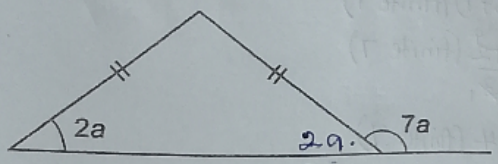
Bp = Sp − P

Sh. 70,000
−Sh. 12000
Sh. 58000

2 cocks cost sh. 58000
1 cock costs sh ?

1 cock × sh. 58000 / 2 cocks
= sh. 29000.

15. Find the value of a in degrees in the diagram below.



$2a + 7a = 180^\circ$
(Straight line angles)

$\frac{9a}{9} = \frac{180}{9}$

$a = 20^\circ$

m F

6. The ratio of male workers to female workers in a factory is 2:3. There are 30 male workers in the factory. Find the total number of workers in the factory.

Total ratio
2 + 3 = 5
Males = 30

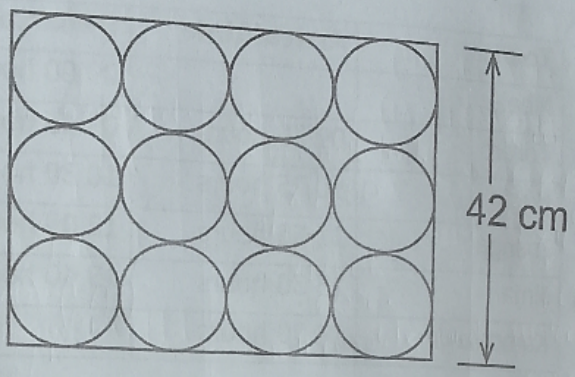
$\frac{2}{5}$ males.

2 parts → 30
5 parts → ?

$\frac{5 \times 30}{2} = 75$ workers

Turn Over

27. Lukwago cut out circular cards from a rectangular manilla paper whose width is 42 cm as shown in the diagram below. Study the diagram and answer the questions that follow.



(a) Find the length of the manilla paper. *(02 marks)*

Diameter of each card.

3 cards → 42cm.

1 card → ?

$\frac{1 \times 42}{3}$ cm

14cm

1 card → 14cm

4 card → ?

4 × 14cm

56cm.

(b) Calculate the area of the pieces of the manilla paper that remained. *(04 marks)*

(Use $\pi = \frac{22}{7}$).

Area of manilla.

L × W

56cm × 42cm

2352 cm^2.

Area of one card.

πr^2

$\frac{22}{7} \times \frac{14}{2}$ cm × 14cm

11cm × 14cm

154 cm^2.

1 card = 154 cm^2

12 cards = (12 × 154 cm^2)

1848 cm^2

Area that remained

2352 cm^2

− 1848 cm^2

504 cm^2

= 504 cm^2.

MUSTAFA SHARIF.

SECTION A: 40 MARKS

*Answer **all** the questions in this section*

*Questions **1** to **20** carry two marks each*

1. Work out: 473 + 312

$$\begin{array}{r} 473 \\ +312 \\ \hline 785 \end{array}$$

2. Write 27,040 in words.

Twenty seven thousand forty

3. Circle all the triangular numbers in the list below.

4, 5, (6,) 7, 8, 9, (10.)

$\frac{n(n+1)}{2}$ 3rd.

$\frac{3}{2}(3+1) = \frac{3}{\cancel{4}} \times \frac{\cancel{4}^{2}}{1} = 6$

$\frac{4^{th}}{\frac{\cancel{4}^{2}}{\cancel{2}_{1}}(4+1)}$

$2 \times 5 = 10$

4. Given that the subsets of set Q are; $\{m\}_1$, $\{k\}_2$, $\{m, k\}_3$, $\{\ \}_4$, find n(Q

No of subsets $= 2^n$

$n(Q) = 2.$

$\begin{array}{r|l} 2 & 4 \\ \hline 2 & 2 \\ & 1 \end{array}$ $= 2^n$

$\frac{2^2}{\cancel{2}} = \frac{2^n}{\cancel{2}}$

$n = 2$ elements.

5. Write 5,834 in standard form.

5834

$583.4 \div 10^1$

$58.34 \div 10^2$

$5.834 \div 10^3$

5.834×10^3

5. The time table below shows the journey of a bus from Mbale to Kampala through Tororo, Bugiri, Iganga and Jinja. Study the table and use it to answer the questions that follow.

Town	Arrival time	Departure time
Mbale		09 00 hours
Tororo	09 30 hours	09 45 hours
Bugiri	10 25 hours	10 30 hours
Iganga	11 50 hours	12 00 hours
Jinja	13 30 hours	13 40 hours
Kampala	14 30 hours	

(a) Convert the arrival time of the bus at Tororo into 12 hour clock. *(01 mark)*

09 30 hours.

Hrs	Min
09	30
−00	00
9:	30 am.

(b) How long did the bus take to travel from Jinja to Kampala? *(01 mark)*

Duration = Ending time − Starting time

Hrs	Min	secs
14	30	=60−10
− 13	40	=50
0	50	

=50 minutes.

(c) The distance from Mbale to Kampala is 275 km. Calculate the average speed of the bus for the whole journey. *(03 marks)*

Total time

Hrs	Min
14	30
− 9	00
5	30

$5\frac{1}{2}$ hours.

Av. speed = $\frac{\text{Total distance}}{\text{Total time}}$

$= \frac{275\text{km}}{5\frac{1}{2}\text{hours}}$

$= 275\text{km} \div \frac{11}{2}\text{hrs}$

$= \frac{275}{1}\text{km} \times \frac{2}{11}\text{Hrs}$

$25\text{km} \times \frac{2}{1\text{hr}}$

50km/hr.

A water tank with a capacity of 4,800 litres was $\frac{3}{4}$ full. Some of the water was sold using 20-litre jerrycans at sh 200 each. After selling the water, $\frac{1}{6}$ of it remained.

(a) Find in litres, the amount of water which was sold. (04 marks)

Fraction remained.

$\frac{3}{4} - \frac{1}{6}$

LCM = 12

$\frac{9}{12} - \frac{2}{12}$

$\frac{7}{12}$

Amount of water in the tank.

$\frac{3}{4_1} \times 4800^{1200}$

3 × 1200L

3600L.

Fraction sold remains

$\frac{1}{6}$ of $\frac{3}{4}$

$\frac{1}{6_2} \times \frac{3}{4} = \frac{1}{8}$

Water sold remained

$\frac{1}{8}$ of 4800L

$\frac{1}{8_1} \times 4800^{600}$L

600L.

Water sold.

3600L - 600L

3000L

(b) Calculate the amount of money earned from the sale of the water. (02 marks)

1 jerrycan → 20L.

? → 3000L

$\frac{1 \text{ jerrycan} \times 3000^{150}\text{L}}{20\text{L}}$

150 jerrycans.

1 jerrycan → sh. 200

150 jerrycans → ?

$\frac{150 \text{ jerrycans} \times \text{Sh. } 200}{1 \text{ jerrycan}}$

Sh. 30000

31. A book costs three times as much as a pencil. A pen costs sh 300 more than a pencil. If a book costs as much as a pen and a pencil, find the cost of a book. (04 marks)

Let the cost of a pencil be n.

book	pencil	pen
3n	n	300+n

book = pen + penal.

3n = n + 300+n

3n = n+n+ Sh.300

3n = 2n + Sh.300

3n − 2n = Sh.300

n = Sh.300

A book.

3 n

but n = Sh.300

3 × Sh.300

Sh.900

Turn

28. In a school, the fraction of boys is $\frac{1}{5}$ more than that of girls. The school has 280 girls.

(a) Find the fraction of girls in the school. (02 marks)

let the fraction of girls be n.

Girls	Boys	Total
n	$n+\frac{1}{5}$	1

$n + n + \frac{1}{5} = 1$

$2n + \frac{1}{5} = 1$

$10n = 5$

$5 \times 2n + \frac{1}{5} \times 5 = 1 \times 5$

$10n + 1 = 5$

$10n + 1 - 1 = 5 - 1$

$\frac{10n}{10} = \frac{4}{10}$

$n = \frac{2}{5}$

(b) Calculate the total number of pupils in the school. (02 marks)

2 part → 280 girls

5 parts → ?

$\frac{5 \times 280}{2}$

5×140

700 pupils.

29. The interior angle sum of a regular polygon is 1800°.

(a) Calculate the number of sides of the polygon. (02 marks)

Interior $\angle$ sum $= 90(2n-4)$

$1800 = 90(2n-4)$

$1800 = 180n - 360$

$180n - 360 = 180n$

$1800 + 360 = 180n$

$\frac{2160}{180} = \frac{180n}{180}$

$n = 12$ sides.

(b) Find the size of each exterior angle of the polygon. (02 marks)

No of sides $= \frac{360°}{\text{Ext}\angle}$

$\text{Ext}\angle \times 12 = \frac{360°}{\text{Ext}\angle} \times \text{Ext}\angle$

$\frac{12\,\text{Ext}\angle}{12} = \frac{360°}{12}$

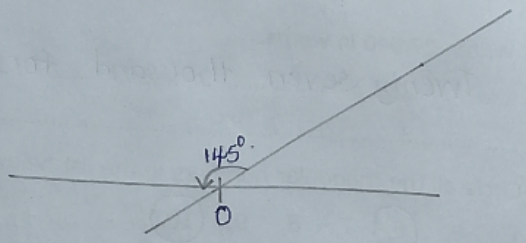
$\text{Ext}\angle = 30°$

6. A taxi left Kampala for Gulu at 10:00 p.m. The journey took 5 hours. What time did the taxi arrive in Gulu?

Ending time = Duration + starting time

Time before midnight				Remaining time	To 12 hour clock.		
Hrs	Min	Hrs	Min	5hrs - 2hrs	Hrs	Min	End
12	00	5	00	3hrs.	12	00	Hrs
10	00	+10	00	12hrs to 24hrs	12	00	00
2	00	15	00 hours	12 00	3	00 p	3
				+12 00			3
				00 00 hours			3:0

7. Using a protractor and a ruler, draw an angle of 145^0 in the space belo



8. Given that $m = 5$, $n = 3$ and $r = -2$, find the value of $\frac{mn}{n-r}$.

$\frac{m \times n}{n-r}$

$\frac{5 \times 3}{3-(-2)}$

$\frac{15}{3+2}$

$\frac{+5}{5_1}\ \frac{3}{}$

$= 3.$

9. Change 9.85 kilogrammes into grammes.

$1kg \rightarrow 1000g$

$9.85kg \rightarrow ?$

$\frac{9.85\,kg \times 1000g}{1\,kg}$

$\frac{985}{100} \times 1000g$

$9850g.$